The Mining Journal

Established 1835 — Railway & Commercial Gazette

Vol. CCXL No. 6128 — LONDON, JANUARY 30, 1953 — PRICE 8d

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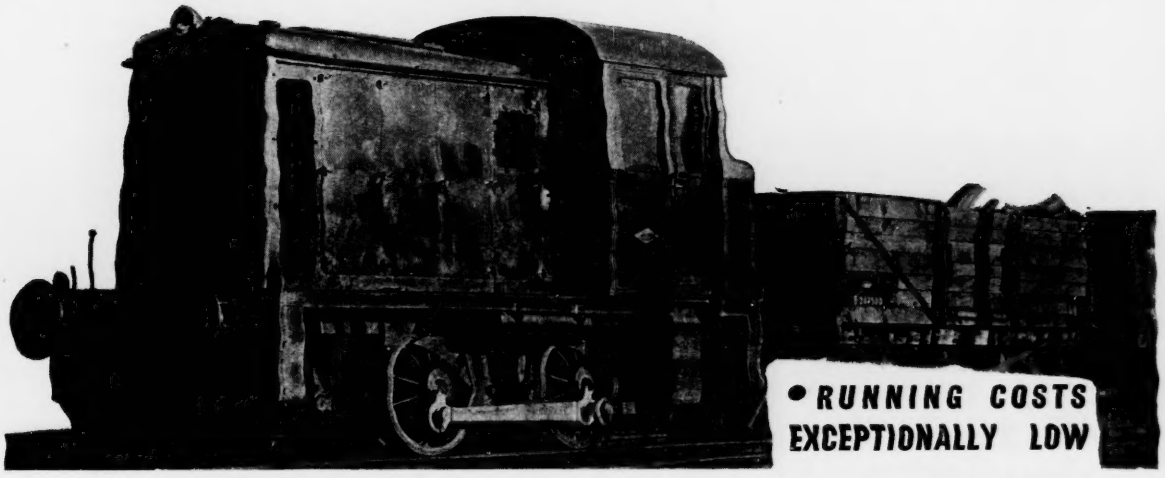

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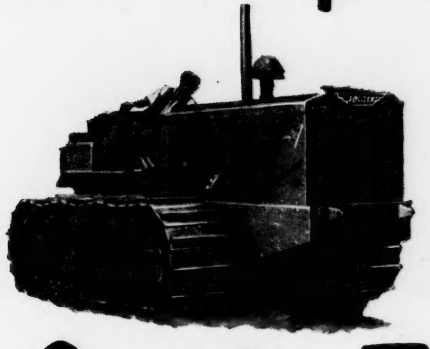

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The Mining Journal

Established 1835

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CONTENTS

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NOTES AND COMMENTS

The Bankers' Views on Economic Progress in the U.K.

Publication of the Westminster Bank's report and accounts earlier this week completes the round of chairmen's statements of this country's leading banks, which traditionally provide a sound analysis of the country's economic progress.

Broadly speaking, the chairmen were all agreed that the monetary policy pursued in the past year had been successful in shouldering the bulk of the burden in the fight against inflation ; that government expenditure should be sharply reduced in the coming budget ; that individual savings must be substantially increased ; that this country must henceforth rely on greater production and exports for its continued viability rather than on grants and loans ; and that the present burden of taxation must be lightened if a greater volume of savings is to be achieved.

In general, the chairmen continued to develop the views expressed in their previous year's statements. Lord Harlech, chairman of the Midland Bank, still feels that " as a nation we are making demands on our basic resources—for current consumption, rearmament, capital construction and restoration of monetary reserves—which collectively are too large to be met in full by production at the present level."

Lord Aldenham, chairman of the Westminster Bank, urged all individuals in their capacity as consumers to bring continuous pressure to bear on the Government to lighten the taxation burden on industry so that enough resources are left to make modernization possible. On the need for saving, Lord Aldenham expressed the view that it was so important at the present time that it would be wise for the Government to give special consideration to the taxes on both company and private saving when any taxation relief becomes possible.

The Earl of Selborne, chairman of the National Provincial Bank, said that at the present level of taxation, estimated to be about 40 per cent. of the national income, must be substantially reduced if we were to re-establish a sound and solvent economy. This statement was, however, qualified by his view that taxation should not be reduced if it meant that the budget would become unbalanced. The first step was to reduce the present scale of government expenditure—including expenditure of local authorities and nationalized industries.

Mr. A. W. Tuke, chairman of Barclays Bank, also referring to government expenditure, said that " some optimists may have hoped that the new era would be ushered in by a holocaust of controls and controllers, with a few shovelfuls of grasshoppers to make the flames burn more fiercely." It was not, of course, he added, quite as easy as that to reduce government expenditure, but it was nevertheless possible to discover the beginnings of a few useful bonfires from which thin columns of ascending smoke could be discerned, indicative, he hoped, of consuming fires within. On the subject of monetary policy, Mr. Tuke said that in spite of the objection raised by certain critics that dearer money penalized good and bad alike, so far as bank advances were concerned it was, in fact, those that were, by definition, the least desirable in the national interest which had been checked.

Lord Balfour of Burleigh, chairman of Lloyds Bank, in his concluding remarks said that the country's vital need was to rebuild its financial and economic strength to pay its way abroad. But he warned that as long as our solvency was menaced by excessive expenditure, our industry strangled, incentive choked by over-taxation and the people still unaware of the need for savings, so long will this country's standard of living, including the maintenance of its social services, continue to be in mortal danger.

Mr. A. Harold Bibby, chairman of Martin's Bank, declared that by the operation of the monetary lever the country was being brought through the most critical period of its post-war financial dangers. He believed, that provided this country had learned its lesson, a more stable and assured standard of living would be within reach of every branch of the community. Yet it does not appear from what he subsequently expressed in his statement that he believed that the lesson had been learned. For he states that it is all too common to hold the belief that a shortage of either non-essential or essential goods could be overcome by increases in our wages, salaries, fees or dividends, instead of by further diligence and hard work. This attitude transferred to the industrial scene—at any rate, to the cotton and ship-building trades—has led to the view that it is considered " as almost unfair and dishonest that the Japanese and Germans, by working harder for rewards that do not provide the amenities we demand, should undercut us."

Sir Thomas D. Barlow, chairman of the District Bank, would like to see some compensatory slackening in the demand for capital goods. He argues that as the Commonwealth countries run down their sterling balances and bring their internal inflation under control they will reduce their demand for capital goods. He believes that this would mean that we should have to satisfy Commonwealth wants in another form ; in other words, that we should have to supply consumer goods rather than capital goods.

Sir Eric A. Carpenter, chairman of William Deacon's Bank, voiced the sentiments of the other bank chairmen when he said that the T.U.C. was to be congratulated on its generally responsible outlook, whatever may be the attitude of individual unions. The T.U.C., he stated, " has rejected any suggestion of industrial action for political ends, and maintains a balanced outlook on the economic situation generally, reinforced possibly by the fact that employment is not so certain as it was."

One of the principle issues on which the bankers did not agree was on what Lord Balfour of Burleigh described as " our greatest need "—that of speeding up the production of capital goods by a major change in the pattern of production. This change he declared could not be eeffcted without some reduction in the demands made upon our resources by home consumption. Thus, he believed that the supreme tasks of financial policy should be to promote the necessary shifting of resources and to create the necessary saving to bring about this change.

This view sits uneasily with that of Sir Eric Carpenter, who believes that there should be no emphasis either way between consumer goods and capital goods, and that of Sir Thomas Barlow who, as mentioned above, wants to see a compensatory slackening in demand for capital goods. Nevertheless, Lord Balfour of Burleigh's arguments were supported by those of Mr. Bibby, who said that if we are to keep one step ahead of our competitors and to take full advantage of our higher intellectual abilities, we must revive to a greater degree the old apprentice principle, so that the vast majority of the population of these islands become skilled craftsmen capable of producing high-grade products which are beyond the capabilities of less skilled competitors. In short, we must turn away from those fields where our old-time customers can now produce for themselves at a cost well below our figure.

A New Zealand Coal Mine Closes

The Minister of Mines of New Zealand, the Hon. W. Sullivan, has commented on a report from Westport that the Webb State coal mine at Stockton might be closed in April. The closure would entail the transfer of over 100 men to other employment.

The reason given for the proposed closing of the mine is that the area reached by the underground workings is more suitable to exploitation by opencast methods. A contributory factor is that winning by means of opencast operations would reduce the danger of fire spreading from the nearby Millerton workings.

The Minister stated that the future of the Stockton mine had been discussed with representatives of the United Mine Workers union, and that he himself would visit the district in February in order to review future operations. Every effort would be made to ensure employment for the workers affected should an alteration be made in the method of working the Stockton mine.

This news is in keeping with the gloomy picture presented by New Zealand mining generally. In *The Mining Journal* of December 12, 1952, the twilight of the Dominion's metal mining industry was discussed at some length, but at the time all reports indicated that amid this rather depressing record coal mining alone presented a stable front.

The industrial and domestic needs of New Zealand, the railways and much of the power plant, are obliged to use coal be the price what it may. Yet labour troubles in the past have played a role in the overall situation, and it seems anomalous that New Zealand should be called upon to import coal despite her considerable resources.

One unsatisfactory result of the disturbed conditions which have existed in the industry during recent years is said to have been that owing to work being suspended at many pits, men have found other occupations and have been permanently lost to the industry.

Géomines' " Mountain of Tin"

(From Our Own Correspondent)

Brussels, January 23.

I have just received the last issue of the *Chronique des Mines Coloniales*, the technical monthly organ of the Bureau d'Etudes Géologiques et Minières Coloniales published in Paris. In it there are several references to the Géomines great tin discovery at Manono-Kitotolo in Northern Katanga. (See *The Mining Journal*, March 28 1952, page 315, and April 18 1952, page 400.) The situation of this area is 27° 20′ - 27° 25′ East longitude and latitude 7° 25′ South. It is connected with the navigable Upper Congo (Lualaba) via light 50 km. railway to the small port of Muyumba.

POSSIBILITIES FOR THE FUTURE

The discovery is dealt with by four geologists, Messrs. E. Clayes, D. Karpoff, L. Landa, and L. A. Lyons. Mr. Lyons states *inter alia* " when the extension programme now being carried out is completed, the Monono tin-bearing pegmatites will become the most important tin mines in the world, with a possibility of treating 24,000 tonnes of low-grade ore per day to yield 10,000 tonnes of tin ingots yearly, not to mention important tonnages of tantalum and niobium ores." As Géomines has never wished details of its discoveries to be fully disclosed and as this was the first time figures were released, I asked for confirmation from the company and one of the directors authorized me to send you the following statement : " It is possible for Géomines to produce 10,000 tons of tin ingots yearly because its reserves are unlimited, but we shall not for the time being produce such a large tonnage. To make this possible we must increase our native labour supply, prepare the development of this great hard rock proposition and complete the equipment. Moreover, we must take into account conditions prevailing and likely to prevail on the tin market."

Another friend of mine, M. Georges Becquevort, informed me that as the Deputy Chairman, M. Dewandre, stated last month "The output for the current financial year to the end of June next will be 4,200 tonnes of cassiterite compared with 3,576 tonnes for the previous year and in the 1953-54 year this will be further increased. By 1956, when the complementary turbines of our Piana Power Station on the Luvua River, a Lualaba tributary, are running, we should produce between 7,000 and 8,000 tonnes of cassiterite."

I was told by another director that the boreholes have been sunk to even greater depth than was at first understood and have gone down to 250 metres in tin-bearing ground throughout, and that this continuity of the formation was a reason why they were not further deepened. The reserves have been estimated authoritatively to represent a century's continuance of the current output, in fact the operation has disclosed an " underground mountain of tin."

Big Increases Promised for Canada in 1953

(From Our Own Correspondent)

Sudbury, January 13

Preliminary data has indicated that mineral production in Canada during 1952 reached $1,270,000,000, an increase of approximately $30,000,000 over 1951. Thus another all-time record has been established despite a decline in the price of gold, lead, zinc, and copper. Offsetting the decline in value of base metals was a sharp increase of $27,000,000 in the value of petroleum production, together with an increase of $3,000,000 in iron ore, $3,600,000 in tungsten, and $7,000,000 in asbestos.

Steel production in Canada during 1952 rose to a record of 3,720,000 s.tons. Net imports of steel into Canada were 1,600,000 tons—showing that total steel consumption in this country during the year rose to 5,320,000 s.tons. It has been estimated that when projected increases are presently completed the annual production of steel will exceed 4,500,000 s.tons. This compares with capacity of just 1,500,000 s.tons a year before the second world war.

Meanwhile, output of iron ore is rising in the Steep Rock and the Michipecoten iron ranges of the province of Ontario—while over and above this looms the preparations for production of 10,000,000 tons annually from the new fields of Quebec and Labrador. And while a great part of the rising volume of iron production is destined for the steel mills of the United States, yet in the general plan of increasing output there is full provision for whatever increase the steel manufacturers in Canada may be able to develop.

The uranium fields of Beaverlodge Lake and surrounding area in the northern part of the province of Saskatchewan appear to be developing into a major source of this vital element. While some of the deposits are extremely rich, yet it is on the big widths of medium to low grades deposits that hopes are centred for large scale operations and longevity. Not only is the Canadian government itself playing a leading part in the development and preparations for production, but private enterprise has taken free rein in methodical effort and precision in the exploration and development of a number of properties in that territory which are already being regarded as probable producers of uranium.

Facilities for refining cobalt at the plant of Deloro Smelting and Refining Co. have been raised to a rate of approximately 60 tons per month. About 50 per cent. of the cobalt ore comes from the Belgian Congo, 40 per cent. from the mines of Canada and the remainder from the United States.

A LARGE PRODUCER OF MAGNESIUM

Canada has now become a large producer of magnesium due to the multi-million dollar plant established by the Dominion Magnesium Co. near Renfrew, Ontario. A few years ago the initial efforts of the company had resulted in a stockpile of £5,000,000 on hand. However, under demand during recent years the stockpile has disappeared, and the current output is being shipped as rapidly as it can be produced. Magnesium consumption in Canada alone has risen to 3,000,000 lb. annually compared with 30,000 lb. before the second world war. Being about one-third lighter than aluminium the demand for magnesium is rising at a very significant rate, and the lighter weight metal is finding its way into a multiplicity of uses.

The Canadian government has declined to permit a diversion of the waters of the Yukon River for the development of hydro-electric energy in Alaska. The application for diversion came from interests associated with the Aluminium Company of America in connection with a proposed aluminium project in Alaska which would have involved tunnelling through the Rocky Mountains and an expenditure of several hundreds of millions of dollars on one of the world's largest aluminium works. The application for diversion was denied for the reason that Canadians may themselves ultimately require hydro-electric energy for projects of their own in northern British Columbia as well as in the Yukon Territory.

PETROLEUM DEVELOPMENT

The developments in connection with the petroleum industry of the Canadian west continue to gain momentum. So rapid has been the growth that even in Canada the average man does not appear to have grasped its full importance. In fact the full significance of the development on national economy at this time is incalculable. Alberta, Saskatchewan—and now Manitoba (three sister provinces which had heretofore been referred to as the prairie lands of Canada's west) have bloomed into a major oil field.

Increasing recognition is being given to the possible existence of a petroleum-bearing basin in the northern part of the province of Ontario—in that section of the province lying adjacent to the south and the west coast of James' Bay. Explorers and geologists have frequently pointed to the favourable prospects. It has been pointed out that the pre-Cambrian rocks which occur in the form of a horseshoe around the James' Bay coast, dip sharply at varying distances inland and are heavily covered with limestone and shales in the James' Bay basin. The staff correspondent of *The Mining Journal* has covered extensive sections of that largely unexplored region, and shares the opinion that the possibilities are favourable—yet involving great daring and risk for those who command capital with which to do the pioneering. The area is vast—and the point of commencement of exploration is the problem. If or when boring should disclose the presence of petroleum at any one point, the exploration activity might then be expected to spread rapidly.

Nickel production from Lynn Lake mine of Sherritt-Gordon Company is scheduled to begin at the end of 1953. The construction of a railway to the mine is making satisfactory progress, hydro-electric power development is up to schedule, mine development and installation of plant equipment is up to expectations—all factors pointing toward the province of Manitoba taking a prominent place among the nickel producing areas of the world. Nickel output in Canada promises to reach a rate of 300,000,000 lb. annually before the coming year is far advanced. International Nickel is expected to produce over 250,000,000 lb.; Falconbridge Nickel is expected to attain a rate of 35,000,000 lb.; and Sherritt-Gordon Mines will go into production—with a rate over 15,000,000 lb. the annual objective.

Although the Canadian government has decided to build a deep sea waterway to connect The Great Lakes with the Atlantic, and is proceeding with plans to begin the job, there are now strong indications that the government of the United States may participate in the task, having in mind that joint control of such a waterway might be of vital concern to the United States. The Canadian government has announced that it would welcome American participation—provided, however, there is no delay incurred in commencement of the enterprise.

Mining Operations at Lake George Mines New South Wales

By T. A. G. HUNGERFORD

The small Australian mining town of Captain's Flat exercises an influence over Australian economy that is far out of proportion to its population or strategical position. Within the area, Lake George Mines Ltd. are exploiting a copper-lead-zinc lode that provides in addition gold, silver, iron pyrites and eventually sulphur, and the mining operations there are of particular interest because of these varied products and the high degree of mechanization achieved in underground working. The following article presents a resume of geological data, mining methods, reduction processes and personnel relationships ; four factors which stand as the basic consideration of any mining operation.

In a fold of the Great Dividing Range, New South Wales, Lake George Mines Ltd. are exploiting a lode of copper-lead-zinc ore which plays an important role in Australian economy. This ore body yields lead, zinc, copper, gold, silver and iron pyrites, the latter mineral in turn providing sulphur which is in short supply throughout the world and is an essential in the manufacture of the superphosphate on which so much of Australian agricultural production depends. The mine itself is located in the western ridges of the Great Dividing Range, New South Wales, at an elevation of 3,005 ft. above sea level.

GEOLOGICAL ASPECTS OF THE DEPOSIT

Shales, sandstones and volcanics with interbedded shales comprise the rock sequence in the Captain's Flat area, the whole being folded into a flatly north-pitching synclinorium. A few miles to the east and west of the synclinorium, large masses of granite outcrop. The ore bodies, contained within the volcanics of the main western limb of the synclinorium, are closely associated with a thin band of attenuated shales. The lode channel trends approximately north and south and can be traced for a distance of 6,000 ft. Within the channel, payable ore is concentrated in two main deposits known as Elliot's and Keating's. The ore bodies are variable in width up to 50 ft., both dipping steeply west and pitching steeply north.

Apart from exploration, no mining operations have been carried out in the less important mineralization known to exist east and west of the main lode channel. The ore is a complex sulphide body and is made up of a fine-grained mixture of galena, zinc blende, chalcopyrite, tetrahedrite and pyrites carrying minor amounts of gold and silver. Gangue present consists of quartz, chert and dolomitic material. Mill head values for the year ended June, 1951, averaged 5.57 per cent. lead, 9.85 per cent. zinc, 0.65 per cent. copper, 19.60 per cent. iron, 1.34 dwt. ton gold, and 1.10 oz. ton of silver.

The lode was first worked in 1884. During the subsequent 16 years, an estimated 206,196 tons of ore was taken out, and yielded 1,521 tons of lead, 3,051 tons of copper, 12,828 oz. of gold and 884,437 oz. of silver. In those days, the sulphur content of the ore was ignored. Very little mining was done between 1900 and 1937, when the Lake George Company took over with the intention of working the mine mainly for zinc and lead. The new Company, with British capital, expended a considerable amount of money and in 1939 established a new mill on the surface.

The mine is now one of the most thoroughly mechanized in Australia, and few of its 600-odd employees would even recognize the pick and shovel tools of trade of the men who first worked the lode.

Access to the mine is via a tunnel adit, located below the collar of the general shaft which connects with nine working levels. These are generally spaced at vertical intervals of 160 ft. The shaft, in hanging well country, has been sunk to a vertical depth of 1,833 ft., and from it, crosscuts extend in an easterly direction to the line of lode. The working faces farthest from each crosscut, measured along the strike of the ore bodies, are 1,900 ft. north and 2,300 ft. south. A blind shaft is being sunk from the 1,230 ft. level to the 2,030 ft. level, to expedite development of lower levels. Until 1946, most of the ore came from Keating's sublevel stopes. Since then, the main production has been from inclined cut-and-fill-stopes.

Keatings, the oldest workings on the lead-zinc lode

Photo: Courtesy Australian News and Information Bureau.

The broken ore from the rill stopes gravitates or is scraped to grizzly-covered ore passes from which it is drawn by chutes on the main haulage levels. The grizzlies have 12 in. spaces between the rails, and the chute openings are 3½ ft. wide by 3¼ ft. high. Slusher drifts with pull holes spaced at intervals are used at sub-level stopes for drawing off the broken ore.

Timbering is not an integral part of mining methods employed, but is used in shafts, main haulage levels in the ore, for flooring the rill stopes and the construction of drawing off chutes. Australian hardwoods are used, and comprise messmate, white ash, brush box and river gums. Shaft guides are of tallow wood or black butt.

Waste filling for stopes is mined from the surface open cuts. The material is bulldozed into waste pass systems, a large proportion gravitating to rill stopes through the north and south branches which junction from the main pass at the 450 ft. level. When a stope is ready for filling, the waste is introduced at apex and both rills are filled at the same time. This naturally reduces the danger of cave-ins when the area is abandoned.

MACHINERY AND POWER SUPPLY

The high degree of mechanization at the Captain's Flat mine is illustrated by the machinery used. Seven 4½-ton locos and four 2½-ton locos of the storage battery type, with 81 two-ton side-dump cars of 34 cu. ft. capacity are used for hauling ore ; 27 scraper haulers from 4 h.p. to 24 h.p. are used in stopes and slusher drifts, and there are scraper hoes ranging in size from 30 in. to 48 in. the latter

weighing from 1,008 lb. to 1,347 lb. There are 10 mine car loaders, five drill jumbos, four air mine pumps and 18 electric mine pumps. The Longyear mucking apparatus with clamshell bucket attachment is used for loading 30 cu. ft. capacity buckets in excavating spoil from the general shaft sink.

Electrical power for the working of the mine is purchased to the extent of 66,000 volts from the Southern Electricity Commission of New South Wales, and the outdoor substation at the mine comprises two 3,500 k.VA. three phase, 66,00/2,300 volt ; 50 cycle transformers and one 66,000 ; three phase oil circuit breaker and lightening arresters. Compressed air is furnished by three electrically driven XVH type Ingersoll-Rand compressors, each having a capacity of 2,000 cu. ft. a minute. For use on the surface a Broomwade D23 portable compressor is available and for places difficult of access underground, there is a Broomwade D21 electrically driven 20 h.p. portable unit.

Under new management and with this degree of mechanization, the mine's output has been spectacular. Up

Concentrates of lead, zinc and pyrites piled for transport

Photo : Courtesy Australian News and Information Bureau

to the end of June, 1952, it had milled over 2,000,000 tons of ore for a return of 219,322 tons of lead concentrates, 318,584 tons of zinc concentrates, 30,161 tons of copper concentrates, 274,792 tons of pyrite concentrates and 1,801 tons of gold concentrates. At present the treatment plant is handling 550 l.tons of ore a day. A report by S. B. McClusky, consulting metallurgist, in 1930, reads : " Certain characteristics distinguish the Lake George ore from the usual complex copper-lead-zinc types, and are of major importance in as much as they influence both treatment and procedure and quality of final products. Of these the intimate mine mineral admixture and minute crystal structure are determining factors. The entire ore body at Lake George presents an apparent homogeneity and fine grain structure not found elsewhere. Obviously fine grinding is essential to free the minerals one from the other."

THE REDUCTION SEQUENCE

During every four weeks' working period, 16,000 tons of ore are raised to the surface after being gathered by electrically operated scrapes, chutes, trains and skips. The primary cracker at the head frame crushes the run-of-mine ore into pieces no larger than 5 in. across. These are transported by conveyor belts to the Symons cone crushers and further reduced to $\frac{1}{2}$ in. size. It is then fed into three ball mills, from which it emerges pounded into a fine powder by the activity of 8,000 3 in. iron balls.

The different materials comprising the concentrate are separated by flotation. Powdered ore, mixed with water to a pulp, goes into a series of flotations cells in each of which several different reagents are added to form a froth and to collect the minerals. Through successive cells, lead, zinc, copper, gold, silver and pyrites are extracted when the froth is scraped off. In the treatment plant, copper concentrate is removed first. Crude sulphur is burnt in a pressure type burner at 2 lb. to the square inch air pressure. The gas is piped to a combustion chamber and then into an absorption tower ; fresh water is sprayed in at the top of the tower and percolates down through six coke beds, spaced 2 ft. apart and 3 in. thick. The pulp is not gassed in the usual manner.

The acid from the absorption tower gravitates through 3 in. steel encased lead pipes to a distributor and is distributed to the ball mill feed, No. 1 copper conditioner and 1st copper cleaner feed. At these plants respectively, 50 per cent., 35 per cent. and 15 per cent. of the sulphur addition takes place. A little over 1 lb. of crude sulphur per ton of ore treated has been found to be most beneficial.

Pulp from the grinding section, with the addition of SO_2, gravitates to a 70 ft. diameter thickener. After it has been thickened to 55 per cent. solid, it is pumped to No. 1 copper conditioner, where only one reagent, SO_2, is added. The pulp is then fed to No. 2 conditioner, when xanthate, aerofloat and cresylic acid are added. Small quantities of xanthate are added, in stages, along the flotation cells. The pulp gravitates from the conditioner to 11 M.S. flotation cells, from which the concentrate is pumped to one cleaner cell where SO_2 is added. The concentrate is then pumped to a final single cleaner cell and, after dewatering, is filtered by an American disc filter. The action of the SO_2 has not yet been rigidly defined ; it is thought that, contrary to the generally accepted opinions, it activates the copper without depressing the lead and zinc to the extent at first suspected.

SUCCESS OF THE COPPER FLOTATION

The success of the copper flotation results from the preferential floating of copper over lead and zinc. The section is not operated on recovery, but on the lead and zinc content of the concentrates. Assays of the samples taken every two hours determine the lead and zinc content, and constant attention has to be given to the operation and the use of collector agents. Otherwise the lead floats freely and is lost to the lead section.

In the lead recovery section, reagents used are cyanide, sodium ethyl amathate and cresylic acid, in the respective proportions of 0.58 lb., 0.18 lb. and 0.01 lb. per ton. The tail from the copper section is pumped into a distributor box to be split into two flows to feed two parallel banks of flotation cells, comprising six lead rougher cells and 12 middlings cells to each bank. The concentrate from the rougher cells is pumped into lead cleaners, which are in three stages.

The cleaner tail flow and the concentrates from the middlings cells are returned to the distributor box. The xanthate is stage fed, but the cyanide is not. The lead rougher tail flows to a 50 ft. diameter thickener for dewatering. In obtaining the zinc concentrates the reagents used are copper sulphate, lime, sodium ethyl xanthate, pine oil and sodium carbonate, in the proportions of 1.37 lb., 1.50 lb., 0.30 lb., 0.20 lb., and 0.57 lb. to the ton respectively.

The thickened pulp from the 50 ft. thickener is pumped to a distributor and split between two parallel banks of cells, consisting of four roughers and eight middlings in each bank. The rougher concentrate is pumped to the cleaner section, which is in two stages. The cleaner tail and middling concentrate return to the distributor. The zinc rougher tail is pumped into a 14 ft. cone classifier and a de-slimed feed is fed to the pyrite section where the re-

agents used are 0.42 lb. of xanthate and 0.55 lb. of cresylic acid to the ton.

Plant tail, consisting of the pyrite tail and the cone overflow, is pumped into a filter plant, where it is thickened to 60 per cent. solid in a 50 ft. thickener and then filtered by an Oliver drum filter. Filtered tailings are stacked by means of conveyor belts and scraper haulers. The slimy residue from the treatment plant is filtered and then stacked. It is at present of no value.

The badge of any mining town is the terraced deposits of waste material from which minerals have been extracted. Since flat areas are at a premium at Lake George Mines, the company recently spent over £A100,000 to install a plant which, by extracting the water from the slimes, assures a safer stacking. The surface work of excavation, road making and maintenance of these tailings dumps goes on ceaselessly, and as with other departments of the mines is highly mechanized. Two tractors of 142 h.p., one of 213 h.p., and two of 92 h.p., operate on the dumps. A Le Tourneau carryall of 10 cu. yd., a Le Tourneau footer, a two-ton mobile crane, a detachable grab for loading materials such as sand, coal, refuse and the like, and a 10 cwt. hydraulic stacker are in constant use.

The lodes worked by Lake George Mines have been partly eroded and scattered along the flats of the Molonglo River in the direction of Canberra, 35 miles away. They meet a large fault to the north of the town and to that point they are well known to the company's geologists. North of the fault the lie of the lodes is not so well known. High prices have encouraged the search for new sources of production, and the surface towards the northern end of the mine has been extensively drilled and probed. Keating's, the most southernly and the oldest part of the mine, caved in after 750,000 tons of ore had been extracted. Now the site is a natural amphitheatre with the lode, a vertical pipe in the face of the cave-in, clearly visible amongst the rubble. Naturally mining there has ceased, but known reserves of ore are such that, even if no more is discovered and base metals prices permit, there should be many years of payable operations ahead of Captain's Flat.

Underground operations at the Captain's Flat faces are carried out in much the same fashion as is underground work at any mine, except for the degree of mechanization. Earnings per shift average £A4, to which must be added a production bonus payable to every employee of the company, whether above or below the surface. This amount is determined by the quantity of lead produced and ruling world prices. It has been as high as £A10 a week.

EMPLOYEE WELFARE

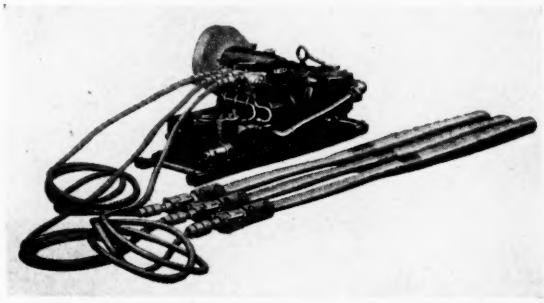
The work force of the mine is drawn mainly from the surrounding district; there is no paucity of labour and the labour turnover is very low. Most of the mine workers are British or Australian born, and many are ex-servicemen. Married workers, for the greater part, live in company-owned cottages, of which 190 have been built. The rentals, for two- and three-bedroom houses, with electricity and reticulated water supply, range from 15s. 6d. to 25s. a week. For unmarried mine workers, the Miners' Hostel in the township of Captain's Flat provides accommodation for 160, at a weekly rate of £A3 6s. 6d.

Climatic conditions in the area are of an extreme nature, and the town itself is isolated. Yet impressive recreational amenities are provided by the company, and as most of the employees own cars the individual family is within easy reach of such towns as Goulburn, Queanbeyan, and even Canberra. Yet isolated as it is, Captain's Flat enjoys strong connections with many distant places such as Port Kembla, where its products are shipped, and the United Kingdom and Belgium, which purchase the greater part of the zinc and lead production of the Lake George lode.

Hydraulic Coal Bursting

Equipment for the hydraulic bursting of coal has been devised by Gullick Ltd., Wigan, and appears to offer many advantages over the time-honoured method of coal removed by shot-firing. The burster consists of a round stainless steel bar chambered at intervals to accommodate telescopic pistons. A series of ports are bored to convey water to the underside of the pistons, and these are thus forced out at high pressure. The pistons are prevented from being completely ejected from the chamber by stops which engage with projections on the piston when it has travelled the full working distance. It follows that if a hole be drilled in the coal face, the steel bar inserted, and the hydraulic power applied, the pistons disrupt the coal and bring it down ready for loading.

The high pressure flexible hose through which the water is conveyed is connected to the burster by means of a quick make-and-break coupling; the other end of the hose being semi-permanently attached to either the pump or face pipe line. To supply the hydraulic power, two types of pump are available, manual and motor-driven. The manual pump consists of a light steel box, and into this the pump barrel complete with plunger, valves, etc., is fitted vertically; the complete unit being readily withdrawn for servicing. The motor-driven pump is a vertical three plunger type,



The Gullick hydraulic burster equipment with motor driven pump

actuated by a camshaft running in ball bearings; the camshaft being driven by a small electric motor through a chain reduction gear. In both cases, the pump box acts as a reservoir for water, a small proportion of soluble oil being mixed with the water to form a lubricant for the leathers.

The equipment is designed for working pressures up to 6 tons per sq.in. By means of a special valve gear on the motor-driven pump, it is possible to operate several bursters automatically from the pump. Thus by using a long length of rubber hose, power is on tap at any point required. The efficiency of the pump results in bursts being completed in 25 sec. from operating the control cock, and up to 20 bursts per hour can be achieved with each burster.

The diameter of hole required to take the burster is somewhat larger than the normal hole for shot-firing, but special drilling equipment has been devised to make the $3\frac{1}{8}$ in. hole required for the $2\frac{1}{4}$ in. diameter burster, and as a consequence the hole for the burster is made at the same speed as an ordinary shot hole. Advantages of the burster technique compared with shot-firing are that the burster cannot ignite gas or dust, while there is no blast to injure workmen or damage equipment. Experience with the burster shows that it is rare for the running and maintenance costs, including spare parts, to reach $\frac{1}{2}$d. per ton, and in many cases these costs are below $\frac{1}{4}$d. per ton of coal mined.

The Development of Atomic Energy in India

The rare earths factory at Alwaye, South India, is the first of its kind in Asia. In this article, recently received from our Indian correspondent, the history and potential output of the factory are presented. The political aspect of the development is stressed here as a matter of national interest, and the development of atomic energy is considered more from the point of view of its social uses.

Declaring open the Rare Earths Factory at Alwaye, South India, the Prime Minister of India, Mr. Jawaharlal Nehru, announced that the Atomic Energy Commission of India had drawn up a plan for the development of atomic energy during the next four years and that the Government of India had approved of the plan. The plan included, the setting up of a medium-sized reactor. The reactor was something which helped in experimentation and in getting to the next stage of using atomic energy. The factory was not merely a step towards industrialization. It was something different in quality and dealt with a substance which was playing a part very significant in human development and human destruction.

India had not got enough resources to think in terms of weapons of destruction, said Mr. Nehru. What was more important was that they had no intention or desire to do so. In these matters they thought in terms of progress and to use them only for peaceful purposes. It was in 1948 that the Atomic Energy Commission of India was constituted by the Government. It was a wise thing that they did so, said Mr. Nehru, because atomic energy was a vast power of the future, which could be used and misused. It could be used for human development and it was likely that in the course of a decade it might change the face of the earth quite sufficiently rapidly.

STATEMENTS BY MR. NEHRU

Speaking of the use of monazite, Mr. Nehru said that they used these deposits in many ways, though, to a large extent, they used the sands physically. The Rare Earths factory was more symbolic of the future than of the present. Referring to the Atomic Energy Act passed by Parliament recently, Mr. Nehru said that it became essential to control the development of this rare earth and minerals connected with this rare earth. The Government of India thought that they should have the power to deal with these minerals.

Normally people thought more in terms of uranium than anything else like the atomic bomb or atomic energy. As a matter of fact, said Mr. Nehru, uranium existed in very small quantities round about Alwaye in Travancore-Cochin. They had got plenty of uranium, much more of it in other parts of India, notably Bihar. Therefore, they had to look at the problem of gradually developing atomic energy for social purposes from an all-India point of view. They could not make the best out of it if they dealt with it in one place because the raw materials were spread out. Even so, their national resources were very limited compared with the enormous resources of some great countries, notably the United States of America.

They were not out to compete with anybody, but they did want to do the work themselves. They were prepared to co-operate in this task with other countries, and if their financial resources permitted, they would welcome co-operation from other countries to have scientific talent of the first order.

Mr. Nehru said he was glad that the factory was the result of the co-operation between the French rare earths factory and Indian scientists. There was no reason why they should not co-operate with foreign concerns and foreign governments if it was to the mutual advantage of both.

FACTORY FIRST OF ITS KIND IN ASIA

The factory is the first of its kind in Asia and produces mixed rare earth chlorides and rare earth carbonates from monazite, a mineral sand extensively found along the coasts of Travancore-Cochin. It has been constructed at a cost of about Rs.8,000,000.

Monazite is washed back upon the shores after going through a cycle of erosion and disintegration of the rocks in the Nilgiri Hills. As the rains erode these rocks the fragments are carried down to the sea, broken and converted into various types of sand. When the sand reaches the sea, currents along the coast sweep back some of these sands and deposit them on the shores when the monsoon is at its height. Often the sea carries out the first step of separating the various sands, but this process is not as perfect as man requires and it is completed in factories which, with the aid of mechanical and electro-magnetic equipment, separate pure monazite from the various constituents of the mineral sands.

The occurrence of monazite in Travancore-Cochin was discovered by a German chemist, Mr. C. W. Schemberg, in 1909. This discovery was immediately followed by an investigation of the mineral sands by the Geological Survey of India. The separation of monazite from other minerals was commenced shortly afterwards and between 1910 and 1914 about 4,000 tons of monazite were separated and exported to foreign countries. In view of its importance as a source of uranium required for the production of atomic energy, the export of monazite from India was banned in 1948.

GOVERNMENTAL INTEREST

It was with the advent of the National Government that the possibilities of exploiting the mineral sands were taken up by the Government of India. Dr. S. S. Bhatnagar was deputed by the Government of India to visit the U.K. and Europe and contact various firms to obtain technical co-operation for the project. An agreement was entered into with the Société de Produits Chimiques des Terres Rares, a French firm. A Committee constituted by the Government decided to have a private limited company, and the Indian Rare Earths Limited was registered at Bombay with an authorized capital of Rs.10,000,000 to manage the factory. The Government of India agreed to subscribe 55 per cent. and the State Government of Travancore-Cochin the balance.

The construction of the factory was started in April, 1951. Five French and two German technicians helped in the erection of the machinery. The factory started production from the middle of July, 1952. The factory will be able to process 1,500 tons of monazite sand a year, and this sand will be supplied by the Government of Travancore-Cochin at Rs.350 per ton. It is expected that the products from the treatment of 1,500 tons of monazite sand will be 1,650 tons of rare earth chloride or 1,150 tons of rare earth carbonate.

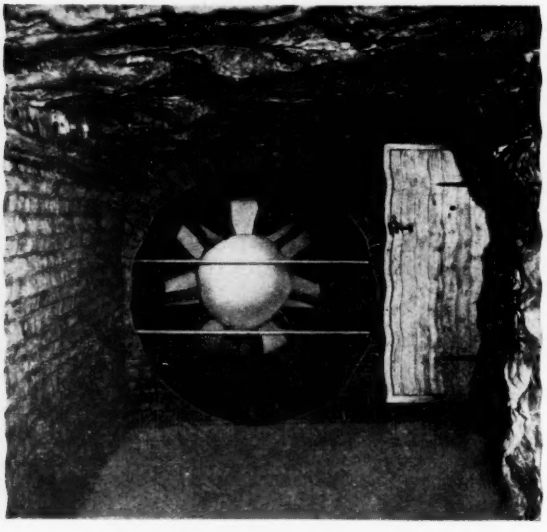
Among the by-products will be trisodium phosphate (crystaline) 1,500 to 1,800 tons and caustic soda lye 900,000 gallons of a 10 to 12 per cent. solution and a residue which if suitably treated, can yield approximately 205 to 228 tons of thorium nitrate, provided all the thorium is converted to the nitrate.

MACHINERY AND EQUIPMENT

A Range of Axial Fans

Interesting pamphlets recently received present the wide range of Tornado fans manufactured by Keith Blackman Ltd. These units have applications in many industries, while their use to the mining industry is worthy of particular attention. The overall dimensions of standard impellers in the multivane centrifugal fans range from 4½ in. to 144 in., and their applications include industrial, marine and mine ventilation as well as air conditioning and process drying and cooling. Mill exhausting fans of the P type and induced draught fans, both for use in conjunction with steam raising plant, are installed at B.E.A. power stations throughout the country.

The efficiency of the manufacturers' axial fans results from a blade design which is based on aerodynamic principles. Blade sections at all radii are of true aerofoil section, selected to give the maximum pressure increase with the least drag over as wide a range as possible. Axial impellers for mine ventilating are cast in one piece up to 65 in. diameter in silicon-aluminium



Discharge side of the 60 in. Axial Fan

alloy, while larger impellers with fixed or adjustable blades in aluminium or bronze castings are constructed with the blades assembled on cast steel or fabricated mild steel centre plates. The guide vanes are fabricated throughout in heavy mild steel plate.

The fan housing is manufactured in either cast iron segments or heavy gauge mild steel and the diffuser and inlet ducts are also in heavy gauge mild steel. Forged steel and fully normalized fan shafts are employed, and high efficiency axial mine fans can be employed for passing large air volumes at pressures up to 4 in. or 5 in. w.g. per stage.

The accompanying photograph depicts a 60 in. diameter, single stage, V-rope driven, high efficiency axial mine fan. In this case the unit is viewed from the discharge side, and the illustration shows the downstream guide vanes on the near side of the impeller. The duty of a unit of this type is the passing of 60,000 cu.ft. of air per min. against 3.4 in. w.g. when running at 1,065 r.p.m. Its application is for ventilation in a gypsum mine.

Topping Up Equipment For Caplamps

A new automatic topping up equipment designed to work in conjunction with the Nife nylon safety vent system for three-cell industrial and miners' caplamps, is now available from Nife Batteries. The use of this apparatus with the new safety vents ensures that alkaline caplamps can be operated in a dry external condition.

The topping up unit consists essentially of a light wooden trolley mounted on jockey wheels. This unit incorporates a rack for the batteries, a distilled water tank with a pump and injector and an automatic electrical control circuit. It is not necessary to remove the vents for the topping up, as this is performed through the central orifice of the nylon plug which is automatically opened when the caplamp battery lid is lifted. Distilled water only need be added as the new system is said to have obviated electrolyte leakage.

The water is pumped through a tube leading to the injection type adaptor, which has automatically centred itself on the exposed vent, and flows into the cell. As soon as the electrolyte reaches the injector needle the water supply is automatically cut off and an indication is given to the operator that the process is complete. About 120 three-cell caplamp batteries an hour can be dealt with. The 6-volt pump is powered by the batteries receiving treatment while the indicator circuit is energized by a separate battery of small capacity. By ensuring correct electrolyte levels and by avoiding the necessity of regularly removing vents, the topping up equipment has removed the major cause of leakage.

Wet and Dry Reagent Feeders

Modern flotation practice demands accurate reagent control, particularly in selective flotation, where accuracy to 0.01 lb. of reagent per ton of ore is usually necessary to obtain the desired metallurgical results. As inaccurate feeding is of great importance in these processes, the Denver Equipment Company has recently presented data of its dry and wet reagent feeders.

The company's wet reagent feeder is designed in varying sizes and compartment numbers, and the units may be centrally installed and several reagents piped to desired points in the circuit or they may be placed at points where the reagents are to be added.

The wet reagent feeder is manufactured in three sizes, Numbers 12, 24 and 36, with each size available in simplex, duplex and multicompartment units. The units are adapted to multi-compartment use by operating several simplex feeders through a sprocket and chain drive, and only one motor and drive are required for this purpose.

Machine No. 12 has a tank capacity of 2 gallons, cups of 10.5 c.c. volume each, and a disc dial of 11¾ in. diameter. Its maximum capacity per minute ranges from 190 c.c. at 7.5 f.p.m. peripheral speed of disc to 855 c.c. at 34.2 f.p.m. peripheral speed of disc. Models operating to a maximum capacity of 2,000 c.c. are also available in the No. 12. The models size No. 24 and 36 grade from these dimensions and capacities to the maximum of 6,700 c.c. per min. attained by the No. 36 at 34.2 f.p.m. peripheral speed of disc.

In so far as dry reagent feeders are concerned, the Denver Cone Type dry reagent feeder is provided with three adjustments for varying the rate of feed. This unit is of all metal construction supported on a steel base, with the rotating disc mounted on a totally enclosed vertical speed reducer, driven by a motor and step cone pulley drive. The motor driven unit is equipped, as standard, with 60 cycle, 110 or 220 volt, 1,800 r.p.m. sleeve bearing motor, step cone pulleys and V-belts. Hopper capacities of the five machines in the range grade from 0.8 cu.ft. to 18 cu.ft.

The belt type dry reagent feeder is suited to feeding wet and sticky materials which have a tendency to form lumps in any but a dry climate. The feeder is equipped with pressed-steel head and tail pulleys, shafts, babbitted bearings and a paddle wheel to assist in the discharge of the reagent, and the complete unit is mounted on a timber sub-structure. In this model the unit includes a speed reducer on a steel base with sprocket and roller chain drive to paddle wheel shaft, but without a drive pulley. The five models of the belt type range have belt speeds varying from 2.1 to 5.7 ft. per hr. in the smallest size up to 4.3 to 11.9 ft. per hr. in the largest. Capacity of the smallest machine when feeding soda ash 2 in. deep at standard belt speeds was 8-23 lb. per hr., and in the largest size 58-160 lb. per hr.

METALS, MINERALS AND ALLOYS

Markets this week have been marking time, a not unreasonable state at this time of year, accentuated by the uncertainties due to the change over of the U.S. Administration to the Republican party after 20 years in the wilderness. Next week we are promised President Eisenhower's inaugural message to the nation which may indicate in what directions we may expect changes in the pattern of Government attitude towards industry and of the attitude of Congress towards the new Administration itself. Till this is clarified, hesitation is likely to be the keynote.

The growth of the importance of the metal and mineral trade in world economy has been frequently pointed out in the *Mining Journal* and is strikingly apparent in the aggregate value of imports into this country during last year. The Board of Trade Returns show that although the total value of all raw materials last year declined by £311,530,237, those of the various minerals and ores all showed marked increase. Non-ferrous concentrates and scrap were £13,697,067 higher, with a total of £92,632,883, and iron ore and scrap were £27,491,267 up, with a total of £73,549,621. Non-metalliferous imports too were £2,131,050 higher, with a total of £28,311,750. In the manufactured materials section the decline in the value of imports was much smaller at £31,267,070. Here again, however, metallic imports showed large increases : non-ferrous metal and manufactures were £39,710,447 up at £207,422,809, while iron and steel in crude or manufactured form were £84,421,741 higher at £126,142,078. Exports showed a similar trend, with non-ferrous materials realizing £12,669,735 against £1,498,248.

COPPER.— The bill to suspend the import duty on copper so long as the average price in the States is 24 c. or better is now in committee in the Senate and is expected to be passed by that body before long. The measure was accepted by the Representatives without debate. The existing duties suspension Act is due to terminate on February 14.

The Copper Institute gives a total copper consumption in the U.S. last year of 1,389,451 s.tons against 1,394,960 in 1951. Imports during the first eleven months of the year are computed at 542,000 s.tons of which Chile contributed 314,000 s.tons. It is not surprising, therefore, that the intentions of the Chilean Government are regarded with some anxiety. It is reported that General Ibañez' Government is expected to raise the price of copper to 38.50 c. f.o.b. Chilean ports, which would mean a delivery price to the U.S. of 39.50 c. As the American producing companies receive only 24.50 c. per lb. the profits to Chile, even on the existing American price of 36.50 c., are very large, being estimated at some $200,000,000. Whether the U.S. Government would accept such a substantial price increase as 3 c. per lb. or might prefer in the last resort to release stockpiled material is a question. Meanwhile, on the intervention of the Chilean Labour Ministry the Kennecott Company has accepted a wage increase of 15 per cent. plus other advantages and the threatened strike has been averted. Negotiations are apparently still proceeding with the Chuquimata workers with February 1 mentioned as a strike date.

Thus the Chilean Government appears to be seeking to secure a dominant position in the copper industry, such as has been exercised in recent years in silver by the Mexican Government and its National Bank. Chile is, of course, the second largest potential world producer and the uncertainty attending wage disputes in Northern Rhodesia had placed the Chilean Government in a strong position to hold the copper consumer up to ransom. Any further increase in the world copper price is bound to stimulate the competition of aluminium, which is already becoming irresistible in certain branches of industry, for besides the fact that aluminium weighs rather less than a third of copper its price is only 20.50 c.

The welcome news that the wage arbitration in Northern Rhodesia has had a successful outcome was received yesterday. At present details are not available. Broadly Mr. Guillebaud's award represents a half-way figure between the original claim of the African union and the companies' offer, and works out at between 1s. 2d. and 1s. 8d. per shift increase, the award to be retrospective from November last. The increased cost to the companies may be around £750,000 a year. However, the coal situation remains difficult. The Nkana Refinery is reducing output from the current date, having only a week's stock at the reduced rate of output. The Mufulira smelter has been partly closed down as the coal reserve is said to be only two days' supply. At Nchanga and Roan Antelope coal stocks are said to be low though production has not yet been cut.

The £A3,000,000 copper smelter of Mount Isa Mines Ltd. is expected to begin production on February 2, the company's manager, Mr. Hilton, has announced. The roaster and reverberatory furnace had a trial run on January 28. The plant which will double Australia's copper production, will reach a capacity output of 18,000 tons a year in a few weeks, the company spokesman said.

LEAD.— The announcement that a settlement had been reached in the strike at the Port Pirie smelter was made on Wednesday and work is to be resumed on Monday next. The men will get increased wages and allowances besides other concessions. The month's strike is estimated to have put back smelters' profits by £A1,500,000 and wages by +£A150,000. Transport of ore from Broken Hill was resumed on Thursday and full production should be reached in three or four weeks' time.

In the United States the St. Joseph Lead Company is to close down two furnaces at its Herculaneum plant between March and July owing to shortage of ores and concentrates. The A.B.M.S. computes the United States lead output last year at 532,778 s.tons as compared with 486,874 in 1951.

TIN.—Tin has been very quiet this week. In the United States, the chief consumer, further relaxation of controls is expected or, at least, hoped for. Meanwhile, under the umbrella of R.F.C. the price is static and will probably remain so until some definite change of policy occurs. Reuter reports from La Paz the signing of an agreement between the Bolivian Mining Corporation and Williams Harvey and Co. Ltd., covering the sale of the production of the Patiño Group of mines, said to be 50 per cent. of the State's total output, at 121¼ c. per lb. of metal delivered New York; for delivery at Chilean ports the price will be 117¼ c.; hitherto all the Patiño output has gone to the Bootle smelter, Liverpool. The first shipment will be made on January 29 amounting to 800 tons. It has been reported in New York that the Chilean Government, on the request of the Bolivian Government, has been shipping materials landed in Chile to Bolivia despite the protest of the tin mining companies who obtained a court injunction in restraint. However, after the courts adjourned the Chilean Government resumed shipment.

ZINC.—Consumers have again showed little interest in zinc. The A.S. and R. has cut its price to 12 c., the lowest figure since May 1952. In a review of the American industry last year, Mr. E. V. Gent, vice-president of the American Zinc Institute, stresses the steady growth of stocks in the hands of smelters from 21,901 s.tons to about 97,000 s.tons in July subsequently declining to 86,987 s.tons at the end of the year. Consumption is estimated at around 850,000 s.tons compared with 933,971 s.tons in the previous year. Production by domestic mines, which improved during the first half of the year, soon afterwards reflected the fall in prices and the effect of strikes. Smelter production of slab zinc is estimated at 961,200 s.tons compared with 931,833 s.tons in the year previous, but shipments were lower at 896,114 s.tons (918,816 in 1951).

ALUMINIUM.—It has been reported in Washington that the United States Government has requested from the British Government a further loan of aluminium pig during the current quarter and possibly part of the second quarter of the year. Owing to the drought of the North-West, output of aluminium has continued to be curtailed. In September last a loan said to amount to 38,500 s.tons was arranged and it is thought that the present application may be for somewhere about half this amount. The transaction could be effected by diverting Alcan shipments to the U.S. instead of to the U.K. Conditions in this country seem to favour the idea of a switch as the Northern Aluminium Company are laying off men at Rogerstone and putting the plant on a four-day week until trade orders improve.

QUICKSILVER.—There was a further drop of $2 per flask in the New York quotation at the end of last week to $210/212. The fall is ascribed to large arrivals of foreign metal.

TUNGSTEN.—Prices remain unchanged from last week with consumers generally buying on a hand to mouth scale.

GOLD.—In furtherance of the Republican platform presented to U.S. electors for the Presidential campaign as noted in our issue of November 7 last, Mr. Daniel Reed, Chairman of the House of Representatives Ways and Means Committee, has re-introduced his earlier bill to restore U.S. currency to a gold basis and making the existing dollar currency convertible with gold. Republicans have always opposed the "loose from gold" policy of President Roosevelt, and the inflationary budget policy which it made possible, but 20 years have gone by since all private stocks were nationalized and the price raised from $21.6 to $35 an ounce and a return to a gold basis for the dollar seems likely to resemble Orpheus' journey to the lower world when he found the descent easy but the return a struggle. The *Mining Journal* has always maintained that sooner or later a return to gold valuation for the dollar would become necessary but a scaling up of the national debt to say nothing of balanced budgets in the future presents big problems. Meanwhile, until the text of Mr. Reed's bill is available and still more the reaction of Congress and of the Administration, speculation on its practicability must be deferred. Anyway, even the introduction of such a measure will bring encouragement to the long suffering gold mining industry.

The London Metal Market

(From Our Metal Exchange Correspondent)

The main item of interest in the tin market has been the report that the English smelter has concluded a contract for the purchase of 50 per cent. of the Bolivian output of tin concentrates over a period of three years, and it appears that the initial price is fixed at $117½ f.o.b. Chilean port for the tin content with some sliding scale involved. The market here has been featureless, and the Singapore price has remained steady on buying for shipment to America. The Eastern price on Thursday morning was equivalent to £955 10s. per ton c.i.f. Europe.

The lead market has been dominated by the news about the negotiations for a resumption of work at Port Pirie, and the recession in price on Tuesday was due to rumours that work was to recommence immediately. In spite of this there is sure to be a scarcity of lead during February unless additional supplies are forthcoming from the Continent, and this is by no means certain as prices there have been at a slight premium over the London Metal Exchange quotation. There is a probability that the market will be broadened by the decision of the German authorities to allow their nationals to deal in lead and tin on the Exchange.

The zinc market has suffered from lack of interest and the reduction in the American quotation to 12 c. per lb. last Tuesday. Demand in this country has shown a slight turn for the better but is still at a very low level, and it is doubtful whether matters will improve until the price has remained constant for a reasonable length of time.

Closing prices and turnover for the week are given in the following table:

	January 22		January 29	
	Buyers	Sellers	Buyers	Sellers
Tin				
Cash	£963	£965	£963	£964
Three months	£943	£944	£944	£945
Settlement	£964		£963	
Week's turnover	205 tons		175 tons	
Lead				
Current month	£100	£100½	£96¼	£96½
Three months	£97¼	£97½	£93¼	£93½
Week's turnover	5,100 tons		5,750 tons	
Zinc				
Current month	£88	£88½	£85	£85½
Three months	£88½	£88½	£85½	£85½
Week's turnover	2,950 tons		3,300 tons	

Iron and Steel

There is no doubt that more keenly competitive conditions are developing in the overseas markets for iron and steel. More drastic cuts in Belgian and French quotations are reported. Nevertheless the volume of British exports of iron and steel is expanding, and this at a time when home industries could absorb much bigger tonnages than are placed at their disposal. In the course of a few months it is expected that abundant supplies will be available, since productivity has been raised to record breaking heights. But immediate requirements cannot be fully satisfied, and consumers in urgent need of plates and sheets have not failed to remark that deficiencies in the supply of these products have been accentuated by the diversion of increased tonnages to overseas destinations.

The shortage of supplies is not confined to finished steel products. Big tonnages of ingots, billets, sheet, bars and slabs are still being imported from Belgium, France and Luxemburg. On the other hand rather less than 60 per cent. of the promised million tons of American steel had been received up to the end of December last. Nevertheless the total imports for the year reached the phenomenal figure of 2,460,000 tons compared with only 883,000 tons in the previous twelve months, and the continued acceptance of foreign steel on a substantial scale will be necessary for some time to come.

Pig iron production is now running at the rate of nearly 11,000,000 tons per annum and is still rising. There are 104 blast furnaces in operation and they are all well provided with iron ore, coke and limestone. Ore imports last year increased by very nearly a million tons and a further rise this year is confidently foreshadowed. By dint of persistent effort scrap deliveries have also improved. The more substantial increase has been in the assembly of house scrap, but arrivals of foreign material have also improved and this despite the fact that Western Germany is no longer a potential source of supply.

JANUARY 29 PRICES

COPPER

Electrolytic .. .. £285 0 0 d/d

TIN, LEAD AND ZINC

(See our London Metal Exchange report for Thursday's prices)

ANTIMONY

English (99%) delivered, 10 cwt. and over .. .. £225 per ton
Crude (70%) .. .. .. £210 per ton
Ore (60% basis) .. .. .. 20s. — 22s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) .. .. £483 per ton

OTHER METALS

Aluminium, £166 per ton
Bismuth (5 cwt. lots) 17s. 6d. lb. (min. 2 cwt. ex-warehouse)
Cadmium (Empire), 14s. 4d. lb.
Chromium, 6s. 5d./7s. 6d. lb.
Cobalt, 20s. lb.
Gold, 248s. f.oz.
Iridium, £60 oz. nom.
Magnesium, 2s. 10½d. lb.
Manganese Metal (96%-98%) 2s. 2d./2s. 3d. per lb. d/d
Osmiridium, £40 oz. nom.
Osmium, £65/£70 oz. nom.
Palladium, £7 15s./£8 10s. oz.
Platinum, £27/£33 5s.
Rhodium, £42 10s. oz.
Ruthenium, £25 oz.
Quicksilver, £70 10s./£71 ex-warehouse
Selenium, 30s./30s. 6d. nom. per lb.
Silver 74d. f.oz. spot and f'd.
Tellurium, 18s./19s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 65% 9s. 9d. lb. c.i.f. 60% 9s. 6d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (lumpy) £13 2s. per ton c.i.f.
" " (concentrates) £13 2s. per ton c.i.f.
" " Refractory £12 14s. per ton c.i.f.
Baluchistan Metallurgical .. £14 15s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26 - £27 d/d
Magnesite, Raw .. .. .. £10 - £11 d/d
Molybdenite (85% basis) .. .. 105s. 10d. per unit c.i.f.
Wolfram (65%) .. .. .. 370s. c.i.f. U.K. buying
" " .. .. .. 392s. 6d. Selling
Scheelite .. .. 360s. c.i.f. U.K. buying
" .. .. 382s. 6d. Selling
Tungsten Metal Powder (for steel manufacture) .. .. 30s. 8d. nom. per lb. (home)
Ferro-tungsten .. .. .. 25/3-25/9 nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £32 3s. 9d. d/d per ton
Ferro-manganese, home .. .. £48 12s. 11d. per ton
Manganese Ore U.K. (48% - 50%) .. .. .. 6s. per unit
Brass Wire .. .. 2s. 8⅞d. per lb. basis
Brass Tubes, solid drawn .. 2s. 2¾d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Gilt-edged were a good feature this week. Institutional support came in for medium and long term issues. Sentiment was helped by the strength of sterling abroad and by the better revenue returns at home. We have, however, still a long way to go before any balance is achieved. The January figures for *the national gold and dollar reserves are expected next week* and it is anticipated that these will show a further improvement.

Among mining issues, gold shares, particularly Kaffirs, were in strong demand although some profit-taking was encountered at the close of dealings for the old account on Tuesday. Among *finance houses, Johnnies rose sharply on the improved outlook* for their O.F.S. holdings, but the returns from their producing Rand mines were disappointing. Far West Rand houses were also well supported. Much of this strength can be attributed to continual rumours of a united effort by sterling area countries *to achieve a higher dollar price for gold. These rumours have* been persistent since the Commonwealth Conference.

Among individual mines, there was particular support for potential uranium producers and in this connection there were rumours that East Champs D'or may soon join their ranks. *The shares have been a firm market. The Doornfontein de*velopment results have attracted particularly favourable com*ment and have reaffirmed hopes in the West Wits line.*

O.F.S. shares were a very bright market. Press comment and study by investors on the recent Freddies development results led to considerable interest in the shares which jumped and affected other issues. Loraine, which joins Freddies North on *its northern border, also rose, although this was partly due to* the announcement of fresh financing arrangements by the company. The Anglo-American Corporation will provide funds totalling £5,500,000 which will be satisfied by the issue of registered unsecured notes. It is noteworthy that Free State *Geduld, which adjoins Freddies South on their southern border,* showed no change. Further news is still awaited concerning the second flood at No. 2 shaft.

West Africans maintained a firm undertone, but Ashantis, after rising to 27s. 9d. bid in a bear squeeze, encountered profit-taking at the end of the account. Other issues recorded useful gains and the position of Ariston and Amalgamated Banket has again been attracting favourable attention. Developments on *both these properties promise well for the future.*

Diamond shares were firmer and De Beers were a particularly *good feature. This company has recently invested a substantial* portion of its reserve funds in the O.F.S. and this has undoubtedly influenced investors.

Coppers, although generally recording gains on the week, finished uncertainly. The results of the Rhodesian arbitration *on proceedings was as anticipated. Although the immediate* outlook for the metal price appears sound, the basis for some months ahead is less certain. Messina moved sharply ahead on dividend hopes. The interim is now expected in April.

Base metal shares hung fire. Tins were featureless. The *metal price is uneasy and an agreement has just been reached* with Bolivia for the purchase of 50 per cent. of their output. *Nigerian companies interested in the lead/zinc project were* slack while awaiting definite news concerning plans for the future. Burma Mines and Mawchis improved following *news that the Burmese army advance is now only 20 miles from* the latter mine, but it is understood that the main resistance *has not yet been encountered. Barriers were steadier on reports* later confirmed, that the Port Pirie strike would be settled before long.

In the miscellaneous section, Murchisons rose 6s. on speculative buying that found the market short of stock. Associated *Manganese were better on reports of improved sales, but* Central Provinces eased on rumours that the Indian authorities were unwilling to grant export licences for the metal at lower prices.

Asbestos shares remained in steady investment demand.

FINANCE	Price Jan. 28	+ or — on week
African & European	2¼	.....
Anglo American Corpn.	6 5/16	+ 1/16
Anglo-French	18/-	.....
Anglo Transvaal Consol.	23/9	.....
Central Mining (£1 shrs.)	34/4½	+7½d
Consolidated Goldfields	47/9	+1/3
Consol. Mines Selection	26/10½	+1/3
East Rand Consols	2/4½	.....
General Mining	4 1/16	.....
H.E. Prop.	30/-	.....
Henderson's Transvaal	9/-	+9d
Johnnies	53/1½	+2/6
Rand Mines	4 1/16	+ 1/16
Rand Selection	36/10½	.....
Strathmore Consol.	27/-	+1/6
Union Corp. (2/6 units)	33/3	+1/-
Vereeniging Estates	3 3/32	— 1/32
Writs	31/-	+1/-
West Wits	46/3	+1/3
RAND GOLD		
Blyvoors	43/6	+3d
Brakpan	15/7½	—3d
City Deep	31/3	—7½d
Consol. Main Reef	31/3	+7½d
Crown	40/7½	+7½d
Daggas	3 3/32	+ 1/32
Doornfontein	27/9	+3d
Durban Deep	2 11/16	.....
E. Daggas	19/-	+1/-
E. Geduld .. (4/- units)	39/4½	.....
E. Rand Props	3 3/8	+ 1/32
Geduld	5 1/16	.....
Govt. Areas	14/9	+3d
Grootvlei	25/9	—9d
Libanon	10/9	+3d
Luipaards Vlei	23/-	—3d
Marievale	20/3	+1/9
Modderfontein East	20/-	—1/3
New Kleinfontein	26/3	.....
New Pioneer	14/6	+6d
Randfontein	28/9	+6d
Robinson Deep	11/3	+3d
Rose Deep	21/-	+1/-
Simmer & Jack	5/10½	+1½d
S.A. Lands	31/10½	.....
Springs	6/10½	+4½d
Stilfontein	24/9	+3d
Sub Nigel	51/3	+2/6
Van Dyk	9/6	.....
Venterspost	15/6	.....
Vlakfontein	17/-	+3d
Vogelstruisbult	31/-	.....
West Driefontein	6⅜	+ 1/8
W. Rand Consolidated	56/3	+7½d
Western Reefs	44/4½	.....

O.F.S.	Price Jan. 28	+ or — on week
Freddies	9/7½	+1/10½
Freddies N.	11/9	+2/9
Freddies S.	12/3	+2/7½
F. S. Geduld	2 1/16	.....
Geoffries	16/-	+1/-
Harmony	20/6	.....
Loraine	7/10½	+1/4½
Lydenburg Estates	8/9	.....
Merriespruit	5/3	+3d
Middle Wits	16/-	+1/-
Pots Platinum	38/1½	+1/7½
Watervaal	19/1½	+3d
COPPER		
Chartered	57/1½	—3d
Esperanza	8/3	.....
Indian Copper	13/3	—3d
Messina	19/10½	+1½d
Nchanga	3 3/32	.....
Rhod. Anglo-American	52/3	+6d
Rhod. Katanga	11/6	+7½d
Rhodesian Selection	15/3	—3d
Rhokana	19¾	+ 1/32
Rio Tinto	25	+ 1/32
Roan Antelope	13/10½	—1½d
Selection Trust	36/3	.....
Tanks	62/3	+2/-
Tharsis Sulphur Br.	42/6	.....
TIN (Eastern)		
Ayer Hitam	28/6	+2/-
Bangrin	8/-	.....
Gopeng	11/3	.....
Hongkong	7/6	—4½d
Ipoh	19/3	—1½d
Kamunting	12/6	—4½d
Kepong Dredging	5/9	.....
Kinta Tin Mines	14/-	—3d
Malayan Dredging	25/6	+6d
Pahang	15/6	—3d
Pengkalen	10/3	.....
Petaling	14/3	—3d
Rambutan	12/9	—4½d
Siamese Tin	22/6	.....
Southern Kinta	15/1½	+7½d
S. Malayan	26/3	.....
S. Tronoh	12/4½	.....
Sungei Kinta	19/-	.....
Tekka Taiping	8/9	+4½d
Tronoh	24/3	+3d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	10/3	.....
Beralt Tin	29/-	+3d
Bisichi	4/9	+4½d
British Tin Inv.	15/-	—3d
Ex-Lands Nigeria	4/9	.....

MISCELLANEOUS GOLD (contd.)	Price Jan. 28	+ or — on week
St. John d'El Rey	27/-	—6d
Zams	35/-	+1/9
DIAMONDS & PLATINUM		
Anglo American Inv.	4¾	.....
Casts	26/3	.....
Cons. Diam. of S.W.A.	4½	+ 1/8
De Beers Defd. Bearer	73/9	+3/9
De Beers Pfd. Bearer	15⅛	+ 1/8
Pots Platinum	10/1½	—1½d
Watervaal	16/6	+3d
Chartered	57/1½	+7½d
Esperanza	3/4½	.....
Indian Copper	4/4½	—1½d
Messina	4 3/32	+ 1/32
Nchanga	6½	+ 1/32
Rhod. Anglo-American	52/3	+6d
Rhod. Katanga	11/6	+7½d
Rhodesian Selection	15/3	—3d
Rhokana	19¾	+ 1/32
Rio Tinto	25	+ 1/32
Roan Antelope	13/10½	—1½d
Selection Trust	36/3	.....
Tanks	62/3	+2/-
Tharsis Sulphur Br.	42/6	.....
TIN (Eastern)		
Ayer Hitam	28/6	+2/-
Bangrin	8/-	.....
Gopeng	11/3	.....
Hongkong	7/6	—4½d
Ipoh	19/3	—1½d
Kamunting	12/6	—4½d
Kepong Dredging	5/9	.....
Kinta Tin Mines	14/-	—3d
Malayan Dredging	25/6	+6d
Pahang	15/6	—3d
Pengkalen	10/3	.....
Petaling	14/3	—3d
Rambutan	12/9	—4½d
Siamese Tin	22/6	.....
Southern Kinta	15/1½	+7½d
S. Malayan	26/3	.....
S. Tronoh	12/4½	.....
Sungei Kinta	19/-	.....
Tekka Taiping	8/9	+4½d
Tronoh	24/3	+3d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	10/3	.....
Beralt Tin	29/-	+3d
Bisichi	4/9	+4½d
British Tin Inv.	15/-	—3d
Ex-Lands Nigeria	4/9	.....
Trinidad Leasehold	27/3	—3d
T.P.D.	25/-	—7½d
Ultramar	25/4½	—1½d

TIN (Nigerian and Miscellaneous contd.)	Price Jan. 28	+ or — on week
Geevor Tin	14/7½ XD	—1½d
Gold & Base Metal	3/1½	—1½d
Jantar Nigeria	13/3	+4½d
Jos Tin Area	10/3XD	+3d
Kaduna Prospectors	3/3	+3d
Kaduna Syndicate	3/9	+6d
London Tin	5/6	.....
United Tin	2/7½	.....
SILVER, LEAD, ZINC		
Broken Hill South	45/-	—1/3
Burma Mines	2/1½	+7½d
Consol. Zinc	27/-	—1/-
Lake George	14/9	—6d
Mount Isa	38/-	—9d
New Broken Hill	23/-	.....
North Broken Hill	58/9	+1/3
Rhodesian Broken Hill	14/1½	+3d
San Francisco Mines	24/6	—6d
Uruwira	3/10½	.....
MISCELLANEOUS		
BASE METALS & COAL		
Amal. Collieries of S.A.	45/6	.....
Associated Manganese	44/9	+1/9
Cape Asbestos	19/9	—1½d
C.P. Manganese	52/-	—1/3
Consol. Murchison	36/-	+6/-
Mashaba	8d	.....
Natal Navigation	3	.....
Rhod. Monteleo	10/7½	—1½d
Turner & Newall	104/-	+1/6
Wankie	15/6	.....
Witbank Colliery	56/3	.....
CANADIAN MINES		
Dome	$37½	+1
Hollinger	$30	.....
Hudson Bay Mining	$105	.....
International Nickel	$81¼	.....
Mining Corpn. of Canada	£5⅛	+ 1/8
Noranda	$145	.....
Quemont	£7⅛	+ 1/8
Yukon	4/6	+3d
OIL		
Anglo-Iranian	6	+ 1/16
Apex	41/3	.....
Attock	26/3	+1/10½
Burmah	43/1½	—7½d
Canadian Eagle	32/-	—6d
Mexican Eagle	20/4½	—1½d
Shell (bearer)	3 3/32	+ 1/32
Shell (bearer)	27/3	—3d
T.P.D.	25/-	—7½d
Ultramar	25/4½	—1½d

COMPANY NEWS AND VIEWS

Alpine Barberton on the Mend

Alpine Barberton during the year to June 30 last incurred a working loss of £9,420. Shareholders will not, of course, be surprised at this announcement as the chairman, Mr. A. H. M. Wedderburn in his annual statement a year ago, said that the current year would be a critical one and that it was unlikely that the mine would be able to hold its own.

On the other hand, they will be encouraged by his statement accompanying the current report and accounts that there are some grounds for believing that the low water mark in the company's fortunes has passed. Grounds for this belief are that the development programme, since the end of the financial year under review, has made good progress and may now be expected to bear fruit; between June and November the grade of ore recovered advanced consistently from 3.45 dwt. to 6.16 dwt. per ton milled. If this improvement has not been fully reflected in the monthly output returns, he declared, it has provided the means whereby increased expenditure on developmnt and on arrears of maintenance work has been made possible.

The current drain on the company's fortunes has, however, reduced the forward balance to £467 and accordingly the company has negotiated a loan of £5,000 secured on its assets in South Africa.

The annual meeting will be held in London on February 18.

Malaysiam Tin—A Difficult Period Ended

With an output virtually unchanged from the preceding year, shareholders of Malaysiam Tin may be a little disappointed to find that the company has decided not to recommend a dividend for the year to March 31 last. This information was given this week in a preliminary statement which also announced that net profit for the year, after providing for all the usual charges and tax liabilities, declined by £2,102 to £4,734.

Year to March 31	*Output (tons)*	*Working profit*	*Taxation*	*Net profit*	*To reserve*	*Carry forward*
		£	£	£	£	£
1952	55	7,778	3,044	4,734	3,000	2,295*
1951	54	18,692	11,856	6,836	5,000	5,253

*After charging £4,692 (1951—nil) on regrouping of labour.

This decrease would not, in all probability, have prevented the company from making a distribution out of the year's profits—albeit at a lower rate than the 5 per cent. paid last year—but the company had to find £4,692 for the resettlement of its labour force to comply with Malaya's emergency regulations. And this expenditure, charged to the appropriation account, required practically the total amount available for distribution. The allocation to general reserve was, therefore, merely a book entry as it was effected by drawing on the carry forward.

It may, perhaps, be recalled that at the last annual meeting, the chairman, Sir Joseph Ball, explained to shareholders that the future prospects of the company depended to a very large extent on the development of the Tanjong Ara area as the former high-grade Rambun section and the lower-grade Sungei Choh section were almost at the end of their working lives. Accordingly, during 1951 every effort was directed towards preparing the Tanjong Ara area for production. This, of course, involved the time consuming but unproductive task of stripping the barren overburden overlaying the virgin tin-bearing ground and resulted in output falling to 55 tons from the 107 tons produced in 1950. It would appear that the policy of concentrating the bulk of the company's factors of production on the preparation of this new area has been continued throughout the year under review, which would account for the standstill in production. In fact, it would not be surprising to find that when the full reports and accounts become available, the Tanjong Ara section is currently being worked on a reasonably normal production basis and that Rambun and Sungei Choh have been leased to tributors. The monthly output returns published since the end of the financial year tend to confirm this view and shareholders should be cheered by the recent monthly output figures which, on an average, reveal an increase of 2-3 tons per month. Moreover, output for the first nine months of the current year totalled 52 tons compared with 44 tons in the comparable period of the year under review.

Since the average price per ton tin received by the company during the year to March 31 last, will not have fallen far short of that received in the preceding year, it is probable that revenue from the Kluang Valley tributors' ore sales, which yielded a net amount of £11,545 in the previous year, have declined, as almost certainly has the profit accruing from the Tambun Rubber Estate—owing to the heavy fall in the rubber price. In the preceding year revenue from this source amounted to £4,467.

Assuming that the company is now working its new mining area on a more or less normal production basis it is safe to say that the company has passed through its difficult period and if in the process shareholders have suffered, there are now good grounds for believing that the company should be able to re-enter the list of dividend payers in the current year. The annual general meeting will be held in London on February 26.

Stream-Line Filters Continue to Forge Ahead

The consolidated trading profit of Stream-Line Filters for the calendar year 1951, at £166,063 showed an expansion of more than £33,500 over 1950 and enabled the company to return to its pre-war practice of paying 20 per cent. on the 5s. shares forming its £100,000 issued capital. This healthy profit expansion would have been even greater if the company had been able to finalize the proceeds accruing from some of its large running contracts. In fact, the difficulty of obtaining these results was one of the factors contributing to the delay in publishing the accounts. The trading profit figure was the principal item comprising gross revenue and after providing for depreciation the net profit was a record.

Year to Dec. 31	*Gross Revenue*	*Depreciation*	*Taxation*	*Net Profit*	*Dividend*	*Carry Forward*
	£	£	£	£	%	£
1951	176,395	12,421	100,531	63,443	20	128,014
1950	133,504	16,229	71,153	45,964	15	85,175

With regard to the 1952 accounts, Mr. C. S. Garland, chairman, told shareholders at the annual meeting held on January 24 last, that E.P.L. would bear particularly heavily as during the years 1947/49 the company, with Government encouragement, was applying all its efforts to building up its world-wide export trade. The present position is mirrored in the balance sheet which reveals that the total quick resources available from cash and tax reserve certificates of £185,404 fell short of the estimated liability for taxation and deferred repairs by some £15,000. Even so, shareholders may wish to bear in mind that while this heavy burden may result in a reduction of the 1952 profits it will not be a true reflection of the company's progress. Indeed order books are full for more than a year ahead and in spite of import cuts operating in many countries, Mr. Garland declared that the company could look to the immediate future with every confidence. In any event, the current dividend distribution of 20 per cent. only requires a net amount of £10,500 and thus should not be difficult to maintain.

Importance of the Copperbelt Arbitration Award

It is believed that the arbitrator's award in the copper wages dispute in Northern Rhodesia will cost the companies concerned some £750,000 a year. Though this appears as a considerable addition to the wages bill, the present prosperity of the copper mines will enable this increase to be easily absorbed. On the other side of the medal, the increased wages awarded to the workers are substantial.

Prima facie, then, this compromise solution must be considered satisfactory. But when the full text of the arbitrator's report becomes available, its merit will depend on whether it can be regarded as a foundation on which satisfactory future relationships between the companies and the unions can be built. For if the planned expansion of the industry, which will make the sterling area self-sufficient in copper and also enable dollars to be earned from copper exports, is to be achieved smoothly, labour relations must be stabilized.

LONDON & RHODESIAN MINING & LAND COMPANY

SIR JOSEPH BALL'S REVIEW

The annual general meeting of the London and Rhodesian Mining and Land Company Ltd. was held on January 22 in London.

Sir Joseph Ball, K.B.E. (Chairman and Managing Director), presided, and, in the course of his speech, said: The gross profit was slightly in excess of £85,000. The Board have found it possible to maintain the dividend at the increased rate of 6 per cent. paid during the two preceding years, and this dividend will be paid in March next.

Ranching Operations. Last year I referred to certain developments which were taking place as a result of the adoption by the Board of a progressive ranching policy. We own two large ranches, namely, Wiltshire (452,582 acres) and Lochard (187,690 acres). The bugbear of ranching in Southern Rhodesia is drought, which has regularly resulted in heavy annual losses of stock. The remedy for this state of affairs is, of course, the provision of adequate supplies both of water and food, and for this reason our efforts have been concentrated during the past two years upon the construction of dams, the sinking of boreholes, and the establishment of arable areas devoted to the growing of various cattle foods.

Tobacco Crop. Last year I reported that the Board had decided to take advantage of the existing high price of tobacco to grow this crop on a suitable section of the Wiltshire Estate. From the 75 acres planted some 47,000 lb. of tobacco (much of it of first-class quality) was produced. At the subsequent sales, our tobacco fetched an average price of 4s. 6d. per lb. The company has now cleared and planted a further 50 acres with tobacco.

MINING

During the year ended June last, the Vubachikwe mine was closed down, the Pickstone mine was sold to Cam and Motor Gold Mining Company (1919) Ltd. at a profit to London and Rhodesian Mining and Land Company Ltd. slightly in excess of £30,000, while the Connaught mine remains on tribute from the Union and Rhodesian Mining and Finance Company Ltd.

The principal mines for the operation of which your company remains responsible are Cam and Motor, Connaught and Rezende, together with the three mines owned by the Coronation Syndicate, viz., Muriel, Arcturus and Tebekwe. In the case of all of these mines, with the exception of Tebekwe, the profit figures during 1952 have shown very substantial improvements over those for the preceding year, and in some cases over those for a good many years past.

With regard to the mines owned by the Coronation Syndicate Ltd., managed on their behalf by Lonrho, namely, Arcturus, Tebekwe and Muriel, Sir Joseph Ball quoted from the speech of the Syndicate's Chairman as follows: Operations at the Arcturus mine continue satisfactorily, and the company declared a maiden dividend of 15 per cent. in respect of the year to June 30 1952. The working profit at Tebekwe decreased sharply in comparison with the previous year but the results to date are improving. Operations at the Muriel mine are most encouraging.

Sir Joseph, referring to the acquisition by Lonrho of a sufficiently large block of shares to give them an effective control of Coronation Syndicate Ltd., said: Coronation Syndicate is now, I am glad to say, in comparatively smooth water and the future outlook for the company, even on the basis of its existing operations, is favourable.

Referring to a potentially important asbestos proposition in which Lonrho and Coronation Syndicate were jointly interested, Sir Joseph said: While I was in South Africa, we were successful in obtaining a free option for a period of three years over some 210 base metal claims at Ratanyana near Gwanda, on some of which asbestos was being produced on a comparatively small but remunerative scale. We are now engaged on extensive exploratory work on these claims, with a view to deciding whether to exercise the option or not. Asbestos of good quality has already been found at depth, and the outlook may be regarded as promising.

Real Estate. At the end of the financial year, your company held well over one million acres of land, and sales during the year were comparatively negligible. Steps are being taken to place on the market certain holdings which we have held for years, and which are not likely to be the subject of development by the company.

Our stand holdings, however—particularly those in Bulawayo and Salisbury—are undoubtedly very valuable. Consideration is now being given to the question whether some or all of these stands should not be sold, with a view to the reinvestment of the proceeds in more remunerative undertakings.

The report was adopted.

RAMBUTAN, LTD.

The Forty-seventh Ordinary General Meeting of Rambutan Limited was held on January 21 1953 at the Registered Office, Redruth.

Mr. Donald W. Thomas (Chairman) presided.

The Reports and Accounts for the year ended June 30 1952 having been circulated for the prescribed time, were taken as read, as was also the Chairman's Statement, circulated with the report and accounts, which was as follows:

The Accounts for the financial year submitted herewith show a gross profit of £7,855, after payment of Government Royalty of £8,577 to the Malayan Government in respect of tin-ore sold during the year, and the provision of £5,834 for United Kingdom and Mayalan taxation.

Shareholders received three dividends totalling 10 per cent. (equivalent to 2s. per share), and this absorbed a net amount of £5,250.

The sum of £1,107 has been written off Capital Expenditure, and after making this provision and accounting for a small profit on the sale of fixed assets the balance standing to the credit of Profit and Loss Account has been increased from £10,123 to £11,669, which the directors propose to carry forward.

The Returns for the first quarter of the current year have been:

July-September 1952—Output of Tin-ore, 380 piculs = 22½ tons.

You will have noticed from the general managers' report that, owing to the concentration of working operations at depth, the volume of ground treated during the year under review was considerably smaller than that treated the previous year. There was also abnormal expenditure on the regrouping of the labour force to comply with the emergency regulations and on the deviation of the Government road and pipeline to which I referred last year. These factors, together with the general rise in the cost of materials and labour, combined to bring about a large increase in the working cost per cubic yard.

The new road deviation was opened to traffic at the end of October 1952 but we have not yet been advised that the pipeline deviation has been put into operation.

I regret that I still have nothing further to report in regard to your company's claim for War Damage, but I understand that a letter has recently been received by the Malayan Chamber of Mines, London, indicating that all the outstanding assessments should be available before the end of 1952.

The long-awaited Report of the American Goodwill Mission to Malaya has now been published and it is satisfactory to note that its contents form a complete answer to the unfounded attacks on the industry made by certain interests in the United States. A better understanding between Malaya and the United States should therefore result, particularly as, early in the year, the Malayan Tin Industry opened the Malayan Tin Bureau in Washington, the object of which is to supply correct information regarding the industry to all interested in tin and its uses and to foster good relations between producers and consumers.

Terrorist activity continued unabated during the period under review, but I am glad to say that the measures instituted by General Sir Gerald Templer are now beginning to have effect. There has recently been some reduction in Communist violence and a greater success in obtaining information which has led to the capture or destruction of terrorist leaders.

The constant strain on the staff continues however, and I am sure that shareholders will wish me to convey to the general managers and the staff at the mine their sincere appreciation of the courage and devotion to duty which all have shown.

In proposing the adoption of the Accounts and Reports Mr. Donald Thomas referred to the Chairman's Statement to the shareholders. This statement had been published by Mr. Stanley Wickett, who had been a director of the company for forty-one years and Chairman for the last ten years, and had recently intimated his wish to resign from the chairmanship. This decision had been accepted by his colleagues with great regret, but with understanding. Mr. Wickett had signified his willingness to continue as a director, and his colleagues were very pleased with this decision.

Mr. Donald Thomas paid tribute to the many years of service rendered to the company by Mr. Stanley Wickett. He felt proud to be elected to follow the many notable men, whose abilities had for so long guided the "Gopeng" (Redruth) group of companies. Mr. Thomas expressed himself as being honoured that he had been elected to succeed Mr. Stanley Wickett as Chairman; he was equally pleased that Mr. Wickett had consented to remain a director of all the companies of which he had hitherto been Chairman; and he felt sure that the amicable relations which had for so many years existed between shareholders, directorate, and administration, would be maintained.

The Statement of Accounts and Balance Sheet, together with the Directors' Report, were received and adopted.

WESTMINSTER BANK LIMITED

LORD ALDENHAM'S ADDRESS

The annual general meeting of Westminster Bank Limited will be held on February 18 1953. In the statement by the chairman, circulated to shareholders in advance, **Lord Aldenham,** speaking of the domestic affairs of the bank, said that during 1952 over 900 members of the staff had attended courses at the bank's two principal training establishments. Early in the year a considerable part of the additional cash payments which the staff had been receiving were consolidated into salaries, existing pensions were increased, and fresh salary scales for new entrants introduced. The compulsory retiring age for new entrants had been raised from 60 to 65.

INCREASE IN PROFITS

The accounts showed an increase in profits of £41,093 as compared with the previous year, and it had proved possible to maintain the dividend rate of 18 per cent. and also to put £600,000 to Reserves for Contingencies. It had been decided to transfer £1,000,000 from these reserves to the Published Reserve.

The Balance Sheet as at December 31 1952 showed an increase of about £12,500,000 in current, deposit and other accounts. There had been a substantial fall in advances, which was in accordance with the Chancellor's policy; but bills discounted had risen as a result of further Government short-term borrowing. The decrease in the country's overseas trade, particularly imports, was reflected in a fall in acceptances, endorsements, etc.

IMPROVED BALANCE OF PAYMENTS POSITION

The outstanding economic event of 1952 had been the improvement in the general balance of payments of the United Kingdom, from a large deficit in the second half of 1951 to a small surplus in the first half of 1952. But the state of the gold and dollar reserve was in fact a more urgent matter. The loss of reserves, which was still heavy in the first quarter of 1952, had been halted by the middle of the year—a great achievement for all the member-countries of the sterling area.

But these improvements had been brought about by a severe curtailment of imports; we had balanced our accounts at a low level of trade, and it was at a high level that all countries, most of all this country, needed the balance to be reached.

The year 1953 might, as officially predicted, be tougher than the last; but if we wanted to ensure that future years would not be tougher still, we must make better use of our productive resources, and build up our capital equipment out of savings. By strengthening ourselves we could diminish the risk of war, but that did not depend on ourselves alone; what did depend on us was whether we had industrial peace and a full effort from all engaged in production.

We could help to secure these things by recognizing the importance of the consumer, who had for too long been "odd man out." If consumers used their powers they could secure stability of the cost of living, and could ensure that increased wages—and profits—were linked with increased production. Manufacturers should be encouraged to install new machines, not by exhortation, but by such a reduction of taxation as would leave to industry the necessary resources.

The consumer in the United States could play a part in preventing the loss which the dollar gap caused to her as well as to us. The policy of "Trade—not Aid" was a sound one for America herself; but it could only be preached usefully to Americans by Americans. Our case for a lowering of American tariffs was weakened by too great a readiness on our part to lecture American on her duty as a creditor nation.

Our own first duty was to pay our debts to the United States and Canada, and it was very gratifying to us all that we were able to meet the service of these debts at the end of 1952.

If the trade of the whole of the sterling area with the rest of the world could be brought to and kept in balance, and if we determined to maintain the internal purchasing power of the pound, we should be able to take the next step—the freeing of the pound from the shackles of exchange control. It had been well said that the present situation—restriction of imports and a tight control of foreign exchange—was like trying to cure the patient by pegging the thermometer. A pound freed from exchange control and yet remaining stable would strengthen the position of London as a financial centre, and would enable us to increase our earnings from banking and other financial services; and by remaining stable would stabilize our costs and thus free manufactuers from the necessity of quoting prices *ruling at delivery date, a practice which would no longer be* possible under the conditions of keener competition which were now developing. Until we could stabilize, or slightly increase, the value of the pound inside the country, we should never succeed in maintaining for long a free and stable pound in the *markets of the world.*

The General Council of the Trades Union Congress had shown that it was well aware of the dangers of the inflationary spiral of wages and prices, and it should therefore not be impossible for the Government and the employers and the Council to agree on both the danger and the remedy. The remedy was surely to make the whole nation understand that continuous advances in paper money wages gave an illusion of prosperity, yet were worse than ineffective, except in so far as they encouraged and developed a more than corresponding increase in our national productivity

INDUSTRIAL PRODUCTION

At the beginning of 1952 we all hoped, with many reservations, that the total of industrial production in this country in 1952 might slightly exceed the corresponding figure for 1951. In fact, to judge by the figures for the first ten months, it would seem likely that there had been a decrease in production of something like 3 per cent. It was not yet possible to apportion the responsibility for this decrease; there had been many causes—a shortage of steel in the early part of the year, a shortage of markets, which was only partially caused by our having priced ourselves out of some markets, a lack of incentive caused partly by heavy taxation on both companies and individuals—all these had contributed to the fall in output. But whatever the causes, the cake which we had to divide amongst ourselves looked like being smaller than that of 1951.

We lived by foreign trade and we would die if we could not produce and sell to the foreigner at the right price the things he wanted in exchange for the things we wanted from him.

The stability of the pound was closely connected with savings, and the trend of net "small savings" had again been downward during 1952.

It was greatly to be hoped that more attention would be focused in this country on the need of every working man for more and more capital equipment at his service in the way of improved machinery. Since saving provided the means for re-equipment, it would come to be recognized that the savings each individual could make, and the capital he refrained from spending, were contributing to the welfare of all. At a time when the need for saving was so important, it would seem wise of the Government to give special consideration to the taxes on both company and private savings when any relief of taxation became possible.

One of the tangible benefits which accrued from the recent Commonwealth Conference was the decision to launch a new Commonwealth finance corporation; but its work would depend largely on the volume of savings. Most kinds of projects which the Corporation was expected to foster would be long-term projects, which would not immediately bring in imports in exchange for exports. It was only while we had a current favourable balance of payments that the Corporation could function to the full.

During 1952 two further important steps were taken to restrict credit: in March, the Bank rate was steeply raised to 4 per cent. from 2½ per cent., and in the autumn the surplus liquid assets of the trading banks were again reduced by a big funding operation. Both these steps had had the expected and desired effect of restricting private borrowing. But there would have been only a small surplus of liquid assets in the hands of the trading banks (after providing for the normal withdrawals caused by taxation payments) if there had not been, simultaneously with the curtailment of private borrowing, a more than counterbalancing increase in Government borrowing and expenditure. It had been galling indeed for all the banks to be forced to be grudging to their credit-worthy customers, only to see their efforts nullified by the not in all cases thrifty expenditure of Government departments.

MAN-POWER AND CONTROLS

During the year some small advance had been made in the redistribution of man-power. There had been a welcome increase in the number of coal-miners, though this had not alas been matched by the increased coal production figures.

Some advance too had been made in the direction of freedom from war-time controls; the trades in lead, zinc, coffee, cotton, cocoa, and linseed, for example, had in each case had a certain measure of freedom restored to them, while tea had been taken off the ration and the control on its price removed. In four important cases where since the end of the war private importation had again been permitted—tea, lead, zinc, and some types of cotton—prices had fallen, showing at any rate that these particular controls had outlived their usefulness.

*The achievements of 1952 could be regarded with great satis*faction; but we must remember that we were taking only the first faltering steps upwards from an unbelievably low and dangerous position. There must be no slackening of the drive towards solvency. We should not yet think of a "breathing space."

TANGANYIKA CONCESSIONS LIMITED

The annual general meeting of Tanganyika Concessions Limited was held on January 22 in Salisbury, Southern Rhodesia, the **Rt. Hon. Sir J. U. F. C. Alexander, P.C., G.C.B., G.C.V.O., C.M.G., O.B.E.** (the chairman), presiding.

Addressing the meeting the chairman said that he thought there was very little that he could add to his review which was published on December 19 1952 except to say that the Union Miniere du Haut-Katanga, which it would be remembered had shown record productions of copper and cobalt during 1951, had announced an increased interim dividend in respect of the year 1952, of 600 francs per share, as compared with the interim dividend of 500 francs per share paid last year. This interim dividend was paid on January 3 1953.

The preliminary returns from the Benguela Railway Company for the full year 1952 had not yet been received, but it was understood that the net operating receipts, before providing for Lisbon and London expenditure and renewals, were likely to amount to approximately 170,000,000 escudos, as compared with 125,000,000 escudos in 1951. Lisbon and London expenditure and provision for renewals were likely to total 34,000,000 escudos this year, as compared with approximately 27,000,000 escudos last year, and there would thus be a net profit of approximately 136,000,000 escudos, as compared with a figure of 97,031,154 for 1951, as shown in the accounts which were before the meeting.

In his review he had stated that the Benguela Railway Company hoped to provide for current redemption of the existing four per cent. debentures and the payment of one year's interest on these debentures each year, and a stockholder had asked him to elucidate this statement. While the payments in respect of the redemption of Benguela Railway Company debentures were up to date, they probably knew that the interest on these debentures was in arrears since 1948. Each year the current year's interest was added to the arrears, but the Railway Company endeavoured to pay the earliest of the annual amounts of interest outstanding. Thus during the year under review we received the interest in respect of the year ended December 31 1948. It was hoped that this procedure would continue and would eventually liquidate the arrears.

The chairman expressed thanks to the company's staff for their untiring services during the year.

The report and accounts were adopted.

JOS TIN AREA (NIGERIA) LIMITED

The forty-second ordinary general meeting of Jos Tin Area (Nigeria) Ltd., was held at the Registered Offices of the Company, 7, Warwick Court, Holborn, W.C.1, on Wednesday last.

The following is an extract from the statement by the chairman **(Mr. A. B. D. Fox, A.R.C.S.,)** which was circulated with the report and accounts:—

Although conditions were not as favourable as in the previous year, the accounts now before you make a satisfactory showing.

The amount of tin concentrate sold was practically the same, being 169¼ tons as against 167½ tons but the gross price which we received for it fell by over £90 a ton as compared with last year, and mining costs for the same period rose by over £50 per ton. In addition to Tin we sold a small quantity of Columbite.

The increase in costs is a matter of concern and is due partly to causes over which the Company has no control, namely, the general inflationary conditions still persisting in West Africa and we are also faced with yet another increase in wages which has recently been agreed. It must be emphasized that our Mining areas are becoming exhausted and that a decline in output is inevitable. We are obliged to work ground of steadily decreasing grade and, for these reasons alone, a cautious financial policy is absolutely necessary. During the year the Lease of that part of our main area, on which there remain residual values, was renewed on satisfactory terms.

You cannot fail to have noticed, from the Appropriation Account, that an overwhelming proportion of our profit has to be set aside for taxation. Excess Profits Levy only applied to the last seven months of the Accounts under review, but it has been thought prudent to make provision for the full liability that might arise in future in connection with Profits Tax on undistributed profits.

The gross income from Investments has risen from £18,656 to £22,390.

Quoted investments at at July 31, 1952, stood in the books at £238,320 with a market valuation at that date of £277,784, an appreciation of £39,464 or 16.56 per cent over the book value.

The Directors recommend a dividend of 20 per cent which compares with the 15 per cent and bonus of 5 per cent declared last year. It is our earnest hope that we may be able, in future years, to maintain steady dividends, but a constant rate must, on no account, be taken for granted, as our main business is, necessarily, subject to uncertainty.

The report and accounts were adopted.

STREAM-LINE FILTERS LTD.

DIVIDEND RESTORED TO PRE-WAR LEVEL

BURDEN OF TAXATION

SATISFACTORY YEAR'S TRADING

At the sixteenth annual general meeting held at the company's offices on January 24, **Mr. C. S. Garland, A.R.C.S., B.Sc., F.R.I.C., M.I.Chem.E.,** the chairman, said that the directors regretted the delay in producing the audited accounts to December 31 1951, due, amongst other causes, to the need for finalizing as far as possible the proceeds from large running contracts in respect of some of which, even at this late date, reserves had been made on conservative estimates of the profit accruing. The board attaches importance to the regular payment of dividends and although the accounts were not then audited it announced and paid a further dividend of 5 per cent. in November.

THE BALANCE SHEET

To simplify the balance sheet, reserves on previous accounts have been consolidated under two new headings "Fixed Assets Replacement Reserve" and "Contingencies and Other Reserves." The first comprises the balances at December 31 1950 on reserve for plant replacement £3,033, capital reserve of £3,094 and £769 profit realized in 1951 on a sale of plant, and £7,104 transferred from profit and loss account. Now that the plant and machinery account has been depreciated to a nominal figure it is necessary to build up this replacement reserve to provide for the greatly increased cost of new plant and machinery.

The contingencies reserve incorporates the balances at December 31 1950 on investment reserve (£8,667), reserve for taxes (£7,200), with £508 surplus realized in 1951 on an investment, and to it has been added £3,000 from profit and loss account—a provision in respect of an investment in the business of a foreign licensee made with a view to protecting the company's important European trade. The total of this reserve account amounts to £19,375. The increase to £5,560 in "Trade Investments" covers this foreign shareholding.

Increased turnover and higher prices of raw materials account for the increase of £17,608 in the stock and work-in-progress after making a reserve for subsequent decline in values, particularly of paper of which the company is a large user and which, for security of supplies, has to be bought on forward contracts. This provision has since been shown to be no more than adequate in the light of the present costs of raw materials.

The dividend has been restored to the pre-war level of 20 per cent. from which it was reduced in 1940 solely on account of the burden of taxation. Taxation remains the heaviest charge on the business and the excess profits levy introduced in the 1952 Budget will bear with particular severity as during the years 1947 to 1949 the company and its subsidiaries were, with Government encouragement, applying all their efforts to a costly re-establishment of their world-wide export trade. It will be observed that even the present very substantial balance of cash and tax reserve certificates of £185,404 on the consolidated accounts falls short by some £15,000 of the ascertained liability for taxation and deferred repairs.

In spite of the disturbance of manufacture arising from the cancellation and deferment of export orders, both direct and through engine builders and electrical equipment manufacturers due to import restriction in many countries in the early part of the year, the results for 1952 appear to be quite satisfactory. The order-books of the parent and subsidiaries provide full employment of all the factories for more than a year ahead. The prices of the principal raw materials seem to have stabilized and the company can look to the immediate future with every confidence but the present scale of profits must be regarded as exceptional.

TRIBUTE TO STAFF

Both turnover and profits attained new records in 1951 and the best thanks of the shareholders for net profit of £40,572 are due to the loyal energetic staff and workers, many of whom have been with the company from its formation.

The report and accounts were adopted.

DIVIDENDS

Geevor Tin Mines 9d. *i* (Feb. 28)
Gold Coast Main Reef 5% *i* (Feb. 20)
Kamunting Tin Dredging 12½% *i* (March 3)
Kent (F.M.S.) Tin 20% *i* (Feb. 28)
Lobitos Oilfields 2½% *i* (Feb. 20)
Tekka 1¼% *i* (Feb. 12)
Western Mining Corporation 6d. (Feb. 27)
United Tin Areas of Nigeria 6%
i interim

DOUBLE DRUM PILING OR HAULING WINCHES 2 TONS LIFTING CAPACITY. Powered by diesel engine. Four available. Excellent condition. Details and price from Chamberlain Industries Ltd., Staffa Road, Leyton, E.10 (Ley. 6636).

BIRTLEY STANDARD VEE SEPARATOR FOR SEPARATING ORES OR COAL ON A DENSITY BASIS. Complete with one 1,400 c.f.m. and one 8,000 c.f.m. fan, motors and control gear, supporting structure and platform, overhead twin feed hopper, dense, light, and middling chutes, etc. Little used and in good condition.

Any further information may be obtained on application to the Building Operations Research Unit, Thatched Barn, Barnet By-pass, Barnet, Herts.

TECHNICAL MINING ASSISTANTS. Vacancies occur with a leading gold mining company in West Africa for technical mining assistants. Applicants preferably should hold a recognized mining degree. Permanent employment is offered with tours abroad of 12 months followed by 3 months' leave on full pay. Passages, furnished quarters and medical attention are provided free. There is a pension scheme in operation. Write stating age, experience and salary required to Box E7264, Whites, 72/78 Fleet Street, London, E.C.4.

HER MAJESTY'S COLONIAL SERVICE

A vacancy exists for a Chief Research and Development Officer, Mines Department, Federation of Malaya (CDE.99/60/03). Appointment is on contract for three years in the first instance with a salary of £2,016 per annum plus expatriation allowance of £392 per annum plus temporary allowances of £406 per annum for a married man without children or £651 for a married man with children. Gratuity at the rate of £70 for each three months' resident service.

Candidates must possess an Honours degree in Mining or Science and have had research and practical mining experience. Duties will include the investigation and application of means of improving mining and mineral-dressing techniques, the determination of mineral resources and the collection and dissemination of technical information.

Quarters when available at a rental of between £21 and £84 per annum; free passages for officer and wife and up to three children under the age of ten; free medical attendance for officer and family whilst in colony; vacation leave four days for each completed month of resident service.

Apply in writing to the Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, giving briefly age, qualifications and experience. Mention the reference number (CDE.99/60/03).

SITUATIONS VACANT ADVERTISED.—*The Notification of Vacancies Order, 1952, must be complied with where applicable.*

Metal and Mineral Trades

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